

**Non invasive water treatment system.**



# Product catalogue

Testimonials





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# Introduction

## History

Over a century ago, the first physical water treatment devices were magnets. The very first Scalewatcher was designed and tested in the field back in 1988, using an alternating current sent through a coil wrapped around the pipe to be treated. The frequencies and amplitudes used were optimized over the years, resulting in an efficient technology for preventing and removing mineral deposits in pipe lines or other water related equipment. Pipe diameters of up to 3 m (120") can now be treated, be it steel, stainless steel or cement. Iron pipes are permeable for magnetic fields so most of the field will go through the pipe wall instead of going through the water. Therefore induction will be less. Also the so called Eddy Currents in iron or copper pipes may have an attenuating effect. Over the years the power output of the units have been increased to overcome these attenuating effects.

Another concern is the flow rate. For high flow rates the treatment time may be too short. Scalewatcher has the knowledge to overcome this, making the product best of its kind on the market today.

Units are available for indoors or outdoors and can be made to meet the demands of any ingress protection classification.

## Research

The Scalewatcher Group of Companies uses an independent scientific research centre in Germany to back up our treatment claims and find an explanation for the positive side effects of the treatment, such as reduction in bacteria and algae growth and the reduction of corrosion.

## Benefits

Not only scale deposits will be prevented and removed in flowing water, field reports show:

- A reduction of algae growth
- A reduction of bacteria count
- A reduction of corrosion.

Applications of the product are numerous:

- Cooling towers/chillers
- Evaporative condensers
- Water boilers
- Fire tube steam boilers
- Pipe lines
- Shell and tube heat exchangers
- Spray nozzles in agriculture or golf courses
- Swimming pools
- Ice cube makers among others.

The product will provide savings on water, energy and chemicals. It does not add anything to the water and is therefore friendly for the environment.

A return on investment of under two years is very well possible.

## What model of Scalewatcher to choose for a successful application

The market can be divided in the Residential, Commercial and Industrial markets.

### Residential:

All private houses, apartments and other private applications such as on pleasure sailing boats, ponds or swimming pools.

Units for the residential market: Nano, 3 Star, 4 Star and 5 Star. These units will work on all pipe sizes one can normally find in private houses or villas. Unlike our competition, Scalewatcher does not state that the 3 Star will only work on 1" pipes or that the 5 Star will only work on 1.5" pipes. It is not correct.

The problem is that for residential situations one never knows the flow rate. If the flow rate is high for a given pipe diameter the flow velocity may be too high for the treatment to be effective. A stronger unit is then required to be able to make more windings. To get an idea of the water usage one has to know how many people are in the house, is the water used for the garden etc... Normally a 3 or 4 Star is sufficient to install, but often the stronger 4 Star has the preference. Installing an indoor unit outdoors voids the Warranty and the Performance Guarantee so in that case the choice can only be the 5 Star.

Electrical power of all residential units is below ten Watt and can be manufactured for any mains voltage and/or frequency.

### Commercial:

Applications as found in bakeries, beauty salons, restaurants, dentists, small buildings, nurseries, schools, ponds, municipal swimming pools, golf courses, laundries and elderly homes. In short where relative clean water is used and where the equipment to protect is not part of an Industry.

Commercial equipment:

Bake off ovens, steam ovens, water boilers, steam boilers, small cooling towers, water supply in general, ice cube makers, filters and pumps for swimming pools.

Models for the Commercial market:

CM2, CM4 for indoors.

CMN2, CMN4 and CMN8 for outdoors.

If the application is indoors, dry environment and pipe diameter is 3", choose the CM4. If outdoors choose the CMN4 for heavy duty.

### Light Industrial:

Applications as found in Industrial chicken farms, hog farms, agriculture, dairy farms or factories, small buildings, ponds, small waste water plants, golf courses, municipal swimming pools, food and beverage industry. Equipment to protect among others:

General water supply lines, cooling pads, spray nozzles used for irrigation, milk lines, cooling tower/chillers, evaporative condensers, water boilers, steam boilers.

Models for the Light Industrial market:

IE2, IE4 and IE8

### Heavy Industrial:

Applications as found in pulp and paper Industry, steel factories, municipal water supply, semi conductor factories, waste water treatment plants, electricity power stations and mining. Equipment to protect among others: General water supply lines, Green and Black liquor lines, de-inking installations, steam boilers, water boilers, scrub-bers, pumps, water lines, belt presses, centrifuges, condensers, air coolers and oil coolers in hydro power plants.

To find the correct unit for the above, one has to know the pipe diameter, pipe material, flow rate (can be read from the pump), TDS if known and equipment to be protected. For the performance guarantee one should know the mean time before plant shutdown for cleaning. Do not install if the TDS is over 50,000 PPM, the water is almost not flowing or dealing with a one pass plate heat exchangers or high pressure steam boilers. For these applications, please contact Scalewatcher directly.

With pipe diameter and flow rate one can calculate the flow velocity or use the chart of flow rates on the next page. If the flow velocity is higher than 1.5 m/s go one unit up according to the table for all units. If the TDS is 4000 or higher at least an Heavy Industrial unit should be used. This high TDS one will find in seawater applications, cooling towers, evaporative condensers, Green and Black liquor lines and de-inking systems.

Models for the Heavy Industrial market:

SE4, SE8, LE12, LE16, HIME24, HIME40, HIME60, HIME80, HIME100, HIME120

The number following the letters indicate the pipe diameter in inches.

**Chart for determining the correct unit for a given pipe diameter and flow rate.**

Water treatment by Scalewatcher is based on electric and magnetic fields induced in the water by means of a coil wrapped around the pipe. A minimum treatment time is essential for the treatment to be effective. Treatment time is proportional with the length of the coil over the pipe and inversely related to the flow velocity. Practically flow rates can vary between zero and 3 to 4 m/s. Higher is not advisable as erosion of the pipe will occur.

Usually the flow velocity is not known, instead the flow rate in cu/hour or GPM. The following table is designed to overcome too high a flow rate and make the coil length accordingly.

Find the pipe diameter and flow rate in the chart. Take the letter which is closest to the value of the flow rate. Then make the coil according to the letter. (Flow rate)

Model	Pipe diameter		Wall thickness in mm	Flow rate in cubm/hr				Flow rate in GPM			
	in inch	in mm		A	B	C	D	A	B	C	D
CM2CMN/IE	1	25	1	2	3	5	7	7	15	22	30
CM2CMN/IE	1.5	38	1	4	8	12	16	17	34	51	68
CM2CMN/IE	2	51	2	7	13	20	27	30	59	89	118
CM2CMN/IE	3	76	2	16	31	47	62	68	137	205	274
CMN/IE/SE	4	102	2	28	56	84	112	125	247	370	493
CM2CMN/IE/SE&LE12/IE8	6	152	3	63	126	189	252	277	555	832	1,110
CMN/IE/SE&LE12/IE8	8	203	4	112	224	336	448	493	986	1,480	1,973
LE12/LE16	10	254	5	175	350	526	701	771	1,541	2,312	3,082
LE12/LE16/HIME24	12	305	8	249	498	747	996	1,095	2,190	3,285	4,379
LE16/HIME24/HIME40	14	356	8	341	683	1,024	1,366	1,502	3,003	4,505	6,007
LE16/HIME24/HIME40	16	406	8	449	897	1,346	1,794	1,973	3,945	5,918	7,891
LE16/HIME24/HIME40	18	457	10	565	1,130	1,695	2,261	2,486	4,971	7,457	9,942
HIME24/HIME40	20	508	10	701	1,402	2,103	2,803	3,082	6,165	9,247	12,330
HIME24/HIME40	22	559	10	851	1,702	2,553	3,405	3,743	7,487	11,230	14,973
HIME24/HIME40	24	610	10	1,016	2,032	3,048	4,064	4,468	8,937	13,405	17,874
HIME40/80/100/120	40	1016	10	2,860	5,720	8,580	11,440	12,578	25,157	37,735	50,313
HIME80/80/100/120	80	1524	10	6,478	12,955	19,433	25,911	28,489	56,978	85,467	113,957
HIME80/100/120	80	2032	10	11,554	23,108	34,662	46,216	50,815	101,629	152,444	203,259
HIME100/120	100	2540	10	18,089	36,178	54,267	72,356	79,555	159,110	238,666	318,221
HIME120	120	3048	10	26,082	52,165	78,247	104,330	114,710	229,421	344,131	458,842

A: Standard coil, i.e. double stacked for CM2 to IE8, 20 windings each. One layer coil for heavy industrial units.  
 B: Treatment time should be twice as long. Make 2 x 20 windings in series one layer for models up to IE8.  
 HI units: Go one unit up.  
 C: Treatment time should be triple. Up to IE8: Use one model up and make 3 x 20 windings in series.  
 HI units: Use two models up.  
 D: Treatment time should be quadruple. Use two models up (IE8 instead of IE2) and make 4 x 20 windings in series.  
 HI units: Use three models up. In both cases one layer coils.

It is very rare that the flow for a given pipe diameter is higher than given under column D.

**Examples**

**Heavy Industrial application**

The pipe diameter is 8", flow rate 300 cu/hour. This leads to configuration C. Go one unit up and install an LE12. If the flow rate is 425 cu/hour then install the LE16.

**Light Industrial application**

The pipe diameter is 2" and the flow rate is estimated to be 11 cu/hour. Use configuration B. Instead of making a double stacked coil of 20 windings long, make a one layer coil consisting of 2 x 20 windings. The treatment time will be more than twice as long.



Coil with two layers on top of each other. Twenty windings each. This doubles the induction.



Three coils in series. Induction will be less. However treatment time will be much longer.

The Scalewatchers are delivered complete with all accessories and clear instruction manuals to make a successful installation.

# Guarantees

## Manufacturer's Warranties against defects and bad workmanship.

This warranty applies to all Residential, Commercial and Industrial Products manufactured by B & D Ingenieursburo BV, Scalewatcher (Thailand) Co., LTD, Scalewatcher Vietnam and Scalewatcher North America Inc. hereinafter called "The Manufacturer".

The Manufacturer warrants against any defect in materials or workmanship as follows:

Star series: Ten years following the date of purchase of the user.

SW Nano: Two years following the date of purchase of the user.

All other units: Five years following the date of purchase of the user.

In the unlikely event the product becomes out of order and is returned within the warranty period, the Manufacturer will repair the unit at its premises or replace it at no charge.

At the discretion of the Manufacturer and based on details supplied by Dealer, the Manufacturer will decide whether the unit can be repaired locally. If local repair is possible, the Manufacturer will supply the necessary spare parts free of charge. To avoid waiting time for the customer, the Manufacturer is prepared to ship a new unit in case on spot repair is not possible without having received the defective unit first.

If the defective unit is not ready for pick up at the premises of dealer within one month, dealer has to pay for the replacement unit.

A return authorization number (RMA#) supplied by Company and must accompany all returned products. Products which are returned without an RMA# and/or not showing original serial number label will not be accepted.

This warranty does not cover defects or malfunctions resulting from outside of the Manufacturer's control including but not limited to, accidents, damage while in transit to our repair location, alterations, unauthorized repair and failure to follow installation instructions, misuse (including broken signal cable), fire or flood. Nor do we warrant our Products to be compatible with any other system.

This warranty does not cover any other electrical appliance or device that may be in use. The Manufacturer accepts no liability for the malfunction of any such device that may be in use other than our Product sold to the user.

As the treatment of the liquid does not affect the composition of the liquid, The Manufacturer is not liable for water quality.

The Manufacturer, its licensees, Dealers, Distributors or other agents are not liable for loss of profit, damage to equipment or other losses as a result of a malfunctioning of our Product.

The ability of the our Products to protect appliances, equipment, fluid carrying pipelines, and other devices against the buildup of scale deposits, is dependent on the contents of the fluid, which may vary from one day to the next. Therefore the Manufacturer, its Dealers, Distributors and/or agents cannot be held liable in case the performance of the Product degrades.

The guarantee shall only remain valid provided that the product was used for the precise purpose that it was designed and manufactured for and provided that it was installed and in strict accordance with the appropriate instructions.

For Warranty purposes it is helpful when information about the installation is entered at the following web page:

[www.scalewatcher.com/form.html](http://www.scalewatcher.com/form.html)

This warranty is the only warranty the Manufacturer offers on the Products and it sets forth all our responsibilities. There are no other expressed warranties.

By installing the our Product the end user confirms and agrees with these Warranties.

## Guarantees

### Manufacturer's Performance Guarantee

#### Introduction

The performance of Scalewatcher depends on many parameters of the water. Therefore, as water changes from time to time and can also be totally different from one customer to the other, it is not possible to guarantee a 100 % lifetime satisfaction; the latter defined by the customer. However when our Group accepts an order, customer can be assured that the installation of the product will exceed expectations. In the unlikely event customer is not satisfied "after sales service" steps in to evaluate the situation and takes measures accordingly. If in their opinion nothing can be done anymore, the Performance Guarantee applies.

#### Performance Guarantees

In the event that Customer is not satisfied about the performance of the Product customer is allowed to return the unit for refund or upgrade. The following conditions apply:

The Product has been used for a certain time period as defined below.

- Scalewatcher Nano: Used for at least three months but not for longer than four months.
- All other products: Used for at least six months but not for longer than 12 months.
- The Product has been used for the application it was designed for.  
Example: A 3 Star is installed outdoors or residential Products are used for commercial and/or industrial applications. Warranty and Performance Guarantee are void.
- The Product is in good cosmetic condition.

The Product is considered working and performing when one notices one of the following points below , for which the Scalewatcher product was bought in the first place.

In pipe lines and water using equipment:

- Hard scale is softened and slowly removed.
- More scaling problems after installation of the Product. These problems will vanish over time.
- Hard scale is being reduced or prevented in free flowing water systems.
- Soft, instead of hard scale is formed where the water is not flowing sufficiently.
- Rust in iron pipes is removed and converted to Black Magnetite.
- Less corrosion.
- Pressure decrease in pipe lines when they were scaled up.

In heat exchangers/cooling towers/chillers/condensers:

- Algae growth is reduced or prevented.
- Bacteria count is reduced or reduced to zero.
- Slime disappeared.
- Differential temperature increased.
- Approach temperature remains stable longer, extending the time before cleaning.

If not satisfied with the results, inform your supplier and together we will try to make it work better. In the unlikely event one of the above does not occur, you are entitled for a refund. Installation- and freight cost will not be reimbursed.



Jan P. de Baat Doelman, M.Sc.  
CEO Scalewatcher Group



**Scalewatchers for private houses, hot tubs and ponds.**

**Scalewatcher Nano**



Adaptors are available for any country.



Indoor use, works best on municipal water supply,. For small houses or apartments. External wall mounted adapter. Input 110-240 VAC, output 12 VDC 200 mA.

Excellent for POU (Point Of Use) like an express coffee machine in a coffee shop.

This mass product is manufactured in China under quality control of B & D Ingenieursburo BV in The Netherlands and conforms to the EC low voltage directive for domestic appliances.

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**Technical specifications**

Supply voltage	110-240 V AC, $\pm 10\%$ , 50/60 Hz
Energy consumption annually	18 kWh
Coil cable	1 mm <sup>2</sup> /20 AWG
Maximum Coil Temperature	176 °F (80 °C)
Capable of driving	One coil double layer or in series
Enclosure material	Polysterol (Grey)
Maximum ambient temperature	122 °F (50 °C)
Minimum ambient temperature	14 °F (-10 °C)
Protection rate	NEMA5/IP54
Weight unpacked	3.9 OZ (110 Gram)
Weight packed	13 ½ OZ (378 Gram)
Dimension unpacked	4.9"x2.8"x1.5" (125x72x37 mm)
Dimension packed	9.3"x5.2"x2" (236 x133 x50 mm)
Quantity per over box	50
Dimension over box	26"x16"x106"/650x417x261 mm
Weight over box	42 lbs/19 kg

**Scalewatchers for private houses, swimming pools and ponds.**

**Model 3 Star EU**



Mainly sold in Europe and the Middle East for private houses where municipal water is used. Works best for municipal water supply. For larger houses. Indoor use only. Integrated power.

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**Technical specifications**

Supply voltage	110-240 V AC, $\pm 10\%$ , 50/60 Hz
Energy consumption annually	32 kWh
Coil cable	18 AWG (1 mm <sup>2</sup> ) stranded
Maximum Coil Temperature	176 °F/80 °C
Capable of driving	2 coils double layer or in series
Maximum ambient temperature	122 °F /50 °C
Minimum ambient temperature	14 °F/-10 °C
Enclosure material	Polysterol Grey
Protection rate	NEMA5/IP54
Dimension unpacked (wxhxd)	5.7"x3.4"x2"/146x87x52 mm
Dimension packed	10" x 9.3" x 2.6" / 24.5x23.5x6.5 cm
Weight unpacked	1.3 lbs/570 Gram
Weight packed	2.2 lbs / 1 kg
Quantity in over box	14
Dimension over box	20"x12"x16"/50x31x41 cm
Weight over box	34 lbs/15.6 kg

**Scalewatchers for private houses, swimming pools and cottages.**

**Model 3 Star US**



Mainly sold in the USA, Canada and South America.  
For municipal and well water, large houses. Indoor use only. External desktop adapter.

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**Technical specifications**

Supply voltage	110-240 V AC, $\pm 10\%$ , 50/60 Hz
Energy consumption annually	32 kWh
Power supply	External voltage converter 12V/1A
Coil cable	18 AWG/1 mm <sup>2</sup> stranded
Maximum Coil Temperature	176 °F/80 °C
Capable of driving	2 coils double stacked or in series
Output Reading	Bar graph
Enclosure material	ABS, Grey
Maximum ambient temperature	140 °F /60 °C
Minimum ambient temperature	14 °F/-10 °C
Enclosure material	ABS, Grey
Protection rate	NEMA5/IP54
Dimension unpacked (LxWxH)	9"x6"x1.5"/ 229x152x38 mm
Dimension packed (LxWxH):	14"x8"x3"/ 356x203x76 mm
Weight unpacked	1 lbs/0.45 kg
Weight packed	3 lbs/1.4 kg
Quantity in over box	116
Dimension over box	16"x16"x9"/41x41x41 cm <sup>3</sup>
Weight over box	38 lbs/17 kg

**Scalewatchers for private large houses, villas and swimming pools**  
**Model 4 Star**



For municipal or well water, large houses and villas. Indoor use only.

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Technical specifications

Supply voltage:	110-240 V AC, $\pm 10\%$ , 50/60 Hz
Energy consumption annually	45 kWh
Power supply	Internal
Optional	External UL/CSA approved AC/DC adapter.
Coil cable	18 AWG (1 mm <sup>2</sup> ) stranded
Maximum Coil Temperature	176 °F/80 °C
Capable of driving	2 coils double stacked or in series
Output Reading	Bar graph
Maximum ambient temperature	122 °F/50 °C
Minimum ambient temperature	14 °F /-10 °C
Enclosure material	ABS, Beige
Protection rate	NEMA5/IP54
Dimension unpacked (LxWxH)	8.3"x4.1"x2.6"/210x105x65 mm
Dimension packed (LxWxH):	9.6"x4.7"x3.5"/245x120x90 mm
Weight unpacked	1.1 lbs/0.5 kg
Weight packed	2.6 lbs/1.2 kg

## Scalewatchers for private houses, swimming pools and ponds.

### Model 5 Star



For municipal or well water, large houses and villa's. Indoors or outdoors. Integrated Power supply.

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#### Technical specifications

Supply voltage	110-240 V AC, $\pm 10\%$ , 50/60 Hz
Energy consumption annually	52 kWh
Coil cable	16 AWG (1.5 mm <sup>2</sup> ) Stranded UV protected
Maximum Coil Temperature	176 °F/80 °C
Capable of driving	2 coils double stacked or in series
External visible indicators	Green signal, Red power LED
Maximum ambient temperature	140 °F /60 °C
Minimum ambient temperature	-13 °F/-25 °C
Enclosure material	Aluminum
Protection rate	NEMA4/IP66
Dimension including mounting brackets	8.8"x3.9"x2.4"/220x100x60 mm
Dimension packed (LxWxH)	12.2"x9.1"x3.1"/310x230x80 mm
Weight unpacked	3.3 lbs/1.5 kg
Weight packed	4.6 lbs/2.1 kg
Quantity per over box	6
Dimension of over box	20"x12"x16"/50x31x41 cm
Weight of over box	28 lbs/12.5 kg

**Scalewatchers for Commercial applications**  
**Model TRP for automobiles, buses and trucks**



In tropical countries, usually anti freeze or anti corrosion liquids are not mixed with the water for the radiator of automobiles, buses or trucks.

The result is that often after one year the radiator has to be replaced because of corrosion and/or scaling. What is more, scaling causes a lower heat transfer. The engine will have a higher temperature and the truck will have to stop sooner for cooling down before being able to continue the trip. The installation of this special unit for trucks or buses will save money on replacement of parts and inefficient down time along the road.

A wide range of DC voltages from 12 V DC to 48 V DC can be supplied to the unit.

Ingress protection: NEMA3/IP55

The enclosure is made of a strong thermo plastic material and is small enough to be installed anywhere near the engine or even in the driver's cabin.

This unit is made in Vietnam only and is distributed in South East Asia and other tropical areas.

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**Technical Specifications**

Input voltage	12-48 VDC
Input current	15 mA at 12 VDC
Maximum ambient temperature	140 °F/60 °C
Dimension	3.2"x2.2"x1.4"/82x57x35 mm
Weight	0.9 kg

Electronics submersed in resin for durability.  
LED Indicator to show correct operation.  
Polarity of battery connection is not important.

## Scalewatchers for Commercial applications

### Models CM2 and CM4



The Commercial models can be used indoors for the following businesses, but not limited to:

Bakeries, restaurants, small buildings, dentists, beauty salons, sauna's, swimming pools, hot water boilers and hospitals

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#### Technical specifications:

Supply voltage	110-240 V AC, $\pm 10\%$ , 50/60 Hz
Energy consumption annually	< 55 kWh
Power supply	Internal
Optional	External AC/DC UL/CSA approved adapter
Coil cable	1.5 mm <sup>2</sup> /16 AWG
Maximum Coil Temperature	176 °F/80 °C
Capable of driving	2 coils double layer or in series
Enclosure material:	ABS
Maximum ambient temperature	122 °F/50 °C
Minimum ambient temperature	14 °F/-10 °C
Protection rate	NEMA5/IP54
Dimension unit (WxDxH)	7.8"x4.5"x2.5"/200x115x64 mm
Dimension packed	9.6"x8.8"x3.9"/245x223x100 mm
Weight unit	32 OZ/0.9 kg
Weight packed	51.8 OZ/1.8 kg
Quantity per over box	10
Dimension over box	20"x12"x16"/50x31x41 cm
Weight over box	42 lbs/19 kg

## Testimonials CM series

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# MEMORANDUM

Property Management

**Date:** March 22, 2012  
**From:** Steve Klein  
**To:** Eduardo Jalles  
 Aqua Genesis USA Inc.  
 420 Vista del Mar – Aptos, CA 95003  
**Reference:** Scalewatcher Performance

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I am writing this letter on the behalf of the Orange County Fire Authority to thank you for such a great product.

We installed the first Scalewatcher System back in February 2009 at the main water inlet to our facility, since then we were so pleased with the results we soon installed 4 more devices in our other Fire Stations.

I would like to inform you that since we are using the Scalewatcher technology to condition our hard water, we have saved thousands of dollars in expensive maintenance for our tankless water heaters, in the past we have had very high maintenance expenses to keep our systems running correctly. To this date our systems are as clear as day one when they were installed. Between my plumber and me we call this system, Our Magic Beans!

The Dishwashers were all scaled up with white cloudy residue before installing the system and now they look like they just came off the showroom floor. Service calls have been reduced by 40% and equipment is lasting longer.

We also had scale build up in our showerheads and now they are all crystal clear and no issues with the holes being clogged up. This reduces us from having to go out and clean or replace the heads on the showers and faucets.

This experience has led OCFA to outfit our other Firehouses with the Scalewatcher system so I recently have placed an order for 6 more units. I will be ordering more of them when my budget allows me to purchase them.

I have estimated about \$1,500.00 per savings each year at each Firehouse that we have it on. Service calls for Dishwashers and Tankless water heaters have been reduced or eliminated. Also our shower doors are not getting damaged as much from the hard water.

I highly recommend to anyone who is having any hard water issues and a tankless water heater system to run out and purchase this system before you have any failure and spend hundreds of dollars that you did not need to spend.

I personally love this system and as I say my plumber and I call this system, Magic Beans! If you want clean pipes and great results call Aqua Genesis.

Once again OCFA thanks you for such a great product and we look to continuing doing business with you.

Sincerely,

*S Klein*

Steve Klein  
 Facilities Manager  
 Orange County Fire Authority

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Orange County Fire Authority – 1 Fire Authority Road, Irvine, CA 92602 714-573-6000

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### Details about the application

**Date:** First Scalewatcher installed February 2009  
 Total Scalewatcher units installed to date: 11  
**Model:** CM2  
**Pipe Diameter:** 1 ½" and 2"  
**TDS:** 345 to 498 ppm  
**Hardness:** 18 to 28 gpg  
**Coil:** standard two layers of 20 to 25 windings each installed at the main water inlet of each fire house.  
**Equipment Protected:** Tankless water heaters, shower heads and shower doors, dishwashers, toilets, general plumbing.



## Testimonials CM series



Dear Sir/Madam,

I would like to express our positive testimonial from the use of the "Scalewatcher" CM4.

The appliance of a type Scalewatcher CM4 commercial with a serial number 2535679 was installed on 15 of January 2010 .

The installation is mounted in front of heat exchanger that provides hot water for bottling line. The appliance is installed on the providing water line with diameter of 50mm.

Before installation, there were problems with the clogging the long thin 8mm dia tubes at the heat exchanger because of the limestone coming from the city water supply on every 40 days.

After the installation of CM4, there is no longer limestone deposits in the pipes and into heat exchanger. Because of previous requirement by the "Scalewatcher" Dealer "Interplan" D.o.o.e.l. Skopje, we have made extension on the incoming water pipe with length of 10 Ml, to be obtained useful distance.

We have got a continuous flow, work without any interruption, productivity increasing, heat energy saving, saving in the working hours in order to remove the defects. Our estimation about savings annually is 43.000 MKD or 700 EURO

We are satisfied by the benefits of purchasing "Scalewatcher" CM4 appliance without using any additional assets as acids, ion-columns, magnets.

Date: 16.01.2012



**Tihomir Kasapinov**  
Project Manager  
Deputy Production Director

**TIKVES Winery AD Skopje**  
29 Noemvri 5, 1430 Kavadarci, Macedonia  
**Telephone:** +389 (43) 414 304 # 111  
**Fax:** +389 (43) 415 451  
**GSM:** +389 (75) 493 637  
**e-mail:** [tihomir.kasapinov@tikves.com.mk](mailto:tihomir.kasapinov@tikves.com.mk)  
**web:** [www.tikves.com.mk](http://www.tikves.com.mk)



**Scalewatchers for Commercial applications**  
**Heavy duty models CMN2, CMN4 and CMN8**



The CMN models are for outdoors and are for commercial applications only. As the coil can get wet, which will attenuate the induction, units for outdoor use are stronger than the corresponding CM models.

### Technical specifications

Model	Pipe diameter	Coil wire	Length (ft/m)	Weight cable (lbs/kg)
CMN2	2"/54 mm	3x0.75 mm <sup>2</sup>	69/21	3.3/1.5
CMN4	4"/100 mm	3x0.75 mm <sup>2</sup>	89/27	4.2/1.9
CMN8	8"/200 mm	3x0.75 mm <sup>2</sup>	132/40	6.4/2.9

Supply voltage	110-240 V AC, ± 10 %, 50/60 Hz
Energy consumption annually	< 77 kWh (CMN8)
Capable of driving	2 coils in series or double stacked
Coil cable	Three core: 0.75 mm <sup>2</sup> Outer diameter 7 mm
Maximum Coil Temperature	392 °F / 200 °C
Maximum ambient temperature	122°F/ 50°C
For pipe sizes up to	8"/200 mm
Enclosure material	Aluminum
Protection rate	NEMA4/IP66
Weight unit	6.6 lbs/3 kg (Add weight cable for total weight)
Weight packed	Less than 5.5 kg depending on model
Dimension unit	10.6"x 7.2" x 2.85"/270 x 183 x 72,5 mm
Dimension packed	14.8"x 12.4"x 3.9"/375 x 315 x 100 mm
Quantity in over box	3
Dimension over box	20" x 12"x 16"/50 x 31 x 41 cm

**Testimonials CMN series**

**TOWN OF HARPERSVILLE**

P.O. Box 370

Harpersville, Alabama 35078-0370

Telephone (205) 672-9961

Fax (205) 672-1929

**THEOANGELO PERKINS**

MAYOR

**JACKIE INGRAM**

CLERK

**COUNCIL MEMBERS**

JANET GILL

BEVERLY ODEN JOHNSON

SHIRLEY MIDDLETON

WILLIAM RAYFIELD

RANDY WOOD

July 19, 2011

TO WHOM IT MAY CONCERN:

My name is Theoangelo Perkins. I serve as mayor and water superintendent of Harpersville, Alabama. I am writing this letter in reference to the Scale Watcher system. Approximately two years ago, local businessman, AL Chatham of Water Processing, spoke with us about Scale Watcher. We saw the potential benefit and decided to try it on our system.

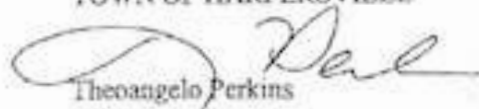
We placed Scale Watcher on our system at our well. After it was put into place, we did not advertise it or inform the public. Within weeks, water customers started commenting and asking questions about the water. "Have you all done something different to the water?" "The water is not as hard." "There is less lime in the water." "I don't have to clean my shower door." "The water tastes better." – are a few of the reactions we got, without even announcing about the system.

We are pleased with the results we got from Scale Watcher and the service of Al Chatham. Mr. Chatham is a reputable man and has operated in this area for many years. Mr. Chatham told us to get the maximum benefit, at least one or more should be put in our system, probably at the second tank. When funds become available, we plan to add two additional units on our system.

Please contact us if you have any questions or if we can be of assistance to you.

Sincerely,

TOWN OF HARPERSVILLE

  
Theoangelo Perkins  
Mayor

## Scalewatchers for Light Industrial applications

### Models IE2, IE4 and IE8



The Scalewatcher small size Light Industrial range is usable for light industrial applications, for protecting cooling towers, boilers, heat exchangers, chillers and process water lines etc. All models have protection IP66 (NEMA4) and are built in an aluminum enclosure with brackets for wall mounting. A display, reading the relative output strength gives the user the confidence that the unit is still working properly.

The water used in Industry is often of bad quality having a higher TDS level compared with water used in commercial applications. These models have therefore a stronger output signal compared with the corresponding CMN models. IE12 for very high flow rates on plastic or non magnetic stainless steel pipes.

#### Technical specifications

Model	Pipe diameter	Coil wire	Length (ft/m)	Weight cable (lbs/kg)
IE2	2"/54 mm	3x0.75 mm <sup>2</sup>	69/21	3.3/1.5
IE4	4"/100 mm	3x0.75 mm <sup>2</sup>	89/27	4.2/1.9
IE8	8"/200 mm	3x0.75 mm <sup>2</sup>	132/40	6.4/2.9
IE12	<12"/300 mm (PVC)	3x0.75 mm <sup>2</sup>		

Supply voltage	110-240 V AC, ± 20 %, 50/60 Hz
Energy consumption annually	< 107 kWh (IE8, 2 layers of 20 windings each) < 151 kWh (IE12 with 4 x 20 windings in series on 8") < 173 kWh (IRE12 with 3 x 30 windings in series on 8")
Capable of driving	2 coils in series or double stacked
Coil cable	Three core: 0.75 mm <sup>2</sup> Outer diameter 7 mm
Maximum Coil Temperature	392 °F / 200 °C
Maximum ambient temperature	122 °F/ 50 °C
For pipe sizes up to	8"/200 mm
Enclosure material	Aluminum
Protection rate	NEMA4/IP66
Weight unit	6.6 lbs/3 kg (Add weight cable for total weight)
Dimension unit	10.6"x 7.2" x 2.85"/270 x 183 x 72,5 mm
Dimension packed	14.8" x 12.4"x 3.9"/375 x 315 x 100 mm
Quantity per over box	3
Dimension over box	20" x 12"x 16"/50 x 31 x 41 cm

Scalewatcher catalogue  
**Testimonials IE series**

**ANGELHAUS CONDOMINIUM**  
**PURGATORY AT DURANGO MOUNTAIN RESORT**

455 Sheol Street  
Durango, Colorado 81301  
970-247-8090, 247-2397 FAX  
info@angelhauscondos.com

April 25, 2013

To Whom It May Concern;

I am writing to inform you of the water treatment system that Vincent Sanchez with Advance Plumbing of Albuquerque installed for us here at Angel\*Haus in Purgatory's Durango Mountain Resort in the fall of 2012. But first a little background.

Angel\*Haus is a condo community that houses 40 units. We did have a water softener that was very expensive to operate and seemed to never work. We were spending \$100 on salt alone each month. I would also have to spend time and effort to haul the salt downstairs to where the softener was located. The association also spent \$200-\$700 each visit for a person to come out and calibrate the unit. Even when this happened I would still get complaints from owners that the water was not good. This does not factor in the water savings that we have by not flushing water down the drain to make to old system work (or not work).

One day Vincent dropped by some information about an Electronic Water Treatment system that seemed very interesting. I presented it to the board and they agreed to install it. On 10/4/12 the installation of a Scalewatcher IE-4 on the main water line took place and I began watching to see what results were going to take place.

Presently, despite a hiccup that has been attributed to hot water tank debris getting cleaned out as a result of the system change, we are pleased with the overall results in the water quality here. We had our board meeting on December 1st 2012 just two months after the system was installed and our board members mentioned that they could tell the difference with the water particularly the dishes and the taste of the water.

If you are having hard water issues I strongly encourage the use of Scalewatcher. I have no maintenance costs now when it comes to water treatment. It is not an expense that we have to budget for anymore, but best of all, I don't even think about it anymore and neither do the owners. Within a few years we will have paid off the cost of the installation in saving from the old system and should actually come out ahead financially as well.

Thank you Vincent and Scalewatcher. We appreciate your help.

Sincerely,



Safelyn Saint

Managing Agent

Angel\*Haus Condominiums



September 6, 2013

To whom it may concern,

On March 27, 2009, an industrial IE8 model Scalewatcher was purchased from Envirotec Monitors, Inc. and was installed at the 8-inch recirculating pipe of our evaporative condenser.

These evaporative condensers were scheduled to be treated with chemical de-scaling system to remove build-up of scales from tubes prior to use of Scalewatcher. After a month, there were very noticeable amount of scales that were collected on the basin of the equipment.

On May 12, 2009, two more Scalewatcher IE8s were purchased following the success of the first installation and continues to perform as expected for over 4 years now.

With the use of the FMW unit, the following benefits were realized:

1. Removal of chemical descaling of the system.
2. Lower operating pressure.
3. Cheaper chemical treatment of system (Mostly Algaecide treatment)

For your perusal and marketing purposes.

Sincerely,

A handwritten signature in blue ink, appearing to read "R. B. De Leon". The signature is stylized and cursive.

R. B. DE LEON  
Engineering Officer  
GenOSI Inc.

**Testimonials IE series**



# Crystal

Premium Drinking Water

**Date:** September 23, 2013

**To Whom It May Concern:**


This is a testimonial on the use Scalewatcher to Descale our system. We at Crystal Industries operate a small bottle water plant in Trinidad & Tobago our production is 600 cases per day.

Our process is charcoal media, reverse osmoses and ozone. Ten years ago our system was overwhelm with calcium build up on complete purification and filling line. Media bonded which made it difficult to replace and membranes were coated hard with calcium buildup on filling nozzles tips and stainless surfaces were coated with difficult to remove calcium.

Mr. Earl Thomas introduced us to Scalewatcher. A Scalewatcher unit were installed on 1 1/2 inch P.V.C. pipe and within three months all pipes and fittings were descaled, media stays loose so it made it easier to replace, less frequent membrane changes, calcium crystals are dump from bypass on reverse osmoses system, nozzles tips and stainless suffices are wipe clean.

After installation of Scalewactcher, Crystal Industries Ltd realize savings of Thirty seven thousand five hundred (\$37,500.00) per annum, because of less need for change out/replacement of media, membranes and labour. We never had to do any repairs outside of regular maintenance.

We at Crystal Industries are total satisfied and fully recommend Scalewatcher to deal with issues of calcium in bottle water manufacturing.



**Anthony Hadeed**  
Managing Director



**Kishore Dadool**  
Production Manager

Crystal Industries Ltd. • #10 Label Boulevard • Trincity Industrial Estate • Trincity • Trinidad • W.I.  
Phone: (868) 640-5469/640-8880 • Fax: (868) 640-0007 • Email: h2o@tstt.net.tt  
Directors: Donald Hadeed • Dergam Hadeed • Stephen Hadeed • Anthony Hadeed

**Scalewatchers for Heavy Industrial applications**  
**Models SE4, SE8, LE12 and LE16, single output**



High quality stainless steel cable glands.

For Heavy Industrial markets such as factories for paper, steel and aluminum, sewage treatment, power plants, oil pipe lines, municipal water supply, food industry and large buildings.

**Technical specifications**

Model	Pipe diameter	Coil wire	Length (ft/m)	Weight cable (lbs/kg)
SE4	4"/100 mm	3x1.5 mm <sup>2</sup>	175/53	13/5.8
SE8	8"/200 mm	3x1.5 mm <sup>2</sup>	215/65	16/7.1
LE12	12"/300 mm	3x1.5 mm <sup>2</sup>	257/78	19/8.5
LE16	16"/400 mm	3x1.5 mm <sup>2</sup>	297/90	22/9.8

Supply voltage	110-240 V AC, ± 20 %, 50/60 Hz
Power	Less than 100 Watt
Overload protection	Internal mains fuse 3A, External fuse 5 A quick blow. Fuse size 0.8x0.2"
Maximum coil temperature	392 °F/200 °C Silicone cable
Optional Heavy Duty Cable	-22 °F to 176 °F/-30 °C to 80 °C
Remote Alarm facility	Isolated alternating switch, contacts rated 24V 1 A
Indicators	7-segment display, with self test software
Enclosure	Epoxy coated stainless steel
Protection rate	NEMA4/IP55, IP56 optional
Maximum ambient temperature	140 °F/60 °C
Minimum ambient temperature	-22 °F/-30 °C
Humidity	20-90%
Weight unit	24 lbs/11 kg
Dimension	14.9x18.1x7.9"/380x460x200 mm
Dimension packed	20"x12"x16"/50x31x41 cm <sup>3</sup>
Weight packed	Add weight of cable



To : ENVIROTEC MONITORS, INC./SCALEWATCHER PHILS.  
From : AIRCOND NETWORK PHILS. INC.  
Date : June 3, 2014

Subject: ScaleWatcher (SW) Performance Evaluation Summary  
at Shoppesville, Greenhills Shopping Center, Philippines  
For the period from January 12, 2011 – April 30, 2014 (3 years and 3 months)

### Before SW Installation

- \* Chemicals being used as water treatment
- \* Yellowish water at catch basin
- \* Condenser Approach temperature was regularly at 8-9°F every 3 weeks which adversely caused the chiller to sound off and vibrate; swabbing/descaling are then undertaken.

### After SW Installation

- \* Condenser approach temperature (CAT) at 6.9°F on Jan. 12, one week after swabbing and installation of the SW, while use of chemical treatment was halted



- \* CAT on June 29, 2011 at 3.6°F, 5 months after SW, without chemicals and swabbing/descaling.



- \* CAT on February 17, 2012 at 4.9°F, still without chemicals and swabbing/descaling since June 29, 2011



2282 Leon Guinto St., Malate, Manila  
Tel: 523-0045; 310-4039 Fax: 521-4094



\*CAT on April 30, 2014 now stable at 3.6°F, again still without chemicals and swabbing/ descaling since June 29, 2011

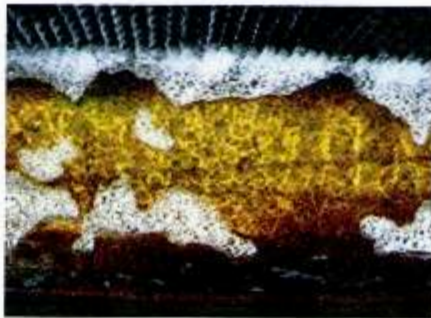


Summary of CAT with SW: Period of February 11, 2011 to April 30, 2014

System	Feb. 11, 2011	April. 19, 2011	April. 20, 2011	June. 29, 2011	Sept. 10, 2011	Oct. 7, 2011	Dec. 05, 2011	Jan. 4, 2012	Feb. 17, 2012	April. 1, 2014	April. 30, 2014
Chiller Condenser Approach	5.8°F 1 <sup>st</sup> Month after swabbing	12.0°F 3rd month after SW installation before swabbing	4.2°F After 2 <sup>nd</sup> Swabbing of Condenser	3.6°F After 3 <sup>rd</sup> Swabbing of Condenser	4.4°F No Swabbing anymore	3.8°F	4.0°F	5.8°F	4.9°F	3.5°F w/ stable Approach	3.6°F w/ stable Approach

**BEFORE**

Water at catch basin was yellowish



**AFTER**


Crystal clear water with settled scales



Per above data, not only savings on water-treatment chemicals and industrial water (with longer intervals of blowdown) are achieved, obviously because the Condenser Approach Temperature has stabilized down to 3.6°F (from a regularly high of 8.9°F every 3 weeks), substantial energy savings are therefore realized.

For your information.

AIRCOND NETWORK PHILS. INC.

  
**WILSON TAN DY**  
Managing Director

2282 Leon Guinto St., Malate, Manila  
Tel: 523-0045; 310-4039 Fax: 521-4094

**Scalewatchers for Heavy Industrial applications**

**Models HIME24, HIME40, HIME80, single output**



Pipe diameters of 600 mm to 1000 mm are mainly found in cooling towers of power plants and steel factories. Pipe diameters of two to three meter in diameter one can find in municipal water supply plants among others.

**Technical specifications**

Model	Pipe diameter	Coil wire	Length (ft/m)	Weight cable (lbs/kg)
HIME24	24"/600 mm	3x2.5 mm <sup>2</sup>	380/115	43/19.3
HIME40	40"/1000 mm	3x2.5 mm <sup>2</sup>	548/166	62/27.9
HIME80	80"/2000 mm	3x2.5 mm <sup>2</sup>	660/200	74/33.6
HIME100	100"/2500 mm	3x2.5 mm <sup>2</sup>	660/200	74/33.6
HIME120	120"/3000 mm	3x2.5 mm <sup>2</sup>	660/200	74/33.6

Supply voltage	110-240 V AC, ± 20 %, 50/60 Hz
Power	Less than 240 Watt depending on model
Overload protection	Internal mains fuse 3A, External fuse 5 A quick blow Fuse size 0.8x0.2"
Maximum coil temperature	392 °F/200 °C Silicone cable
Optional Heavy Duty Cable	-22 °F to 176 °F/-30 °C to 80 °C
Remote Alarm facility	Isolated alternating switch, contacts rated 24V 1 A
Indicators	7-segment display, with self test software.
Enclosure	Epoxy coated stainless steel
Protection rate	NEMA4/IP55, IP56 optional
Maximum ambient temperature	140 °F/60 °C
Minimum ambient temperature	-22 °F/-30 °C
Humidity	20-90%
Weight unit	39 lbs/17.8 kg
Dimension	14.9x23.2x7.9"/380x590x200 mm
Dimension packed	24"x24"x24"/60x60x60 cm
Weight packed	Add weight of cable

## Testimonials Heavy Industrial HIME series

**NXP Semiconductors Cabuyao, Inc.** presents this

### **FMW WATER TREATMENT** (FREQUENCY MODULATED WAVEFORM)



EMAR B. LUSTRE

For installing a new technology called FMW or frequency modulated waveform, a non-chemical water-treatment device for the effective prevention and removal of scales (including silica), corrosion, mussels, silt and sludge. FMW replaced the water treatment chemicals currently being use in cooling water system to reduce water consumption and sewer costs, cost avoidance in water treatment of cooling tower, reduced maintenance and electricity consumption. This project realized a savings of \$14.3K/month.

The Team's passion and commitment to contribute and deliver exceptional performance and Team support, truly demonstrate our **NXP Values**.

Given this 19<sup>th</sup> day of December 2013 at EHS Training Room, NXP Semiconductors Cabuyao Inc, in LISP 1 Bo. Diezmo, Cabuyao Laguna.

JOSE MIGUEL A. ORLEANS  
APP General Manager

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Customer-focused  
passion to win



**Testimonials Heavy Industrial HIME series**



**NATIONAL POWER CORPORATION  
MINDANAO GENERATION**  
Agus 6/7 Hydroelectric Plant Complex

**MEMORANDUM**

**FOR** : MR. R. P. BRIOSO  
OIC, Mindanao Generation

**FROM** : MR. A. F. SUEZO, JR.  
Plant Manager, Agus 6/7 HEPC

**DATE** : AUGUST 28, 2008

**SUBJECT** : WATER CONDITIONING SYSTEM, FMW – TYPE INSTALLED THRU BRF FUND

Based on the attached reports by respective Plant Operation/Maintenance Managers of Agus 6 and 7 Plants, the electronic Frequency Modulated Waveform (FMW) water conditioning system installed in the cooling system of the generator have considerably improved the cooling efficiency and reduced the maintenance and downtime cost of the Plant Complex. As such, the corporation realized monetary benefits estimated as follows:

1. Increase Capacity of the Generators – Scientific studies showed that scale build-up reduces the efficiency of the cooling system. Just 1/8 in. scale formation can increase heating by 40 %. With regards to Agus Plants where the cooling water is generally clear and clean, scale formation is not a serious problem. However, with the installation of FMW, it was observed that the scales, sludge and slime formation in the generator air coolers were even further reduced to the point that the Plant Maintenance discontinued the general dismantling of all other air coolers because after all they were generally clean due to the treatment by FMW.

Although it is hard to quantify the apparent increase in capacity and other benefits, we can conservatively assume even with a very minimal increase of 1 % will amount to savings computed as follows:

Agus 6 Units 3, 4 & 5 Rated Capacity	- 150 MW
Agus 7 Units 1 & 2	- 54 MW
<b>Total</b>	<b>204 MW</b>

At 1 % increase in capacity, the annual savings is:

$$204\text{MW} \times .6\text{LF} \times 24\text{hrs} \times 345 \text{ days} \times \text{P } 1.5/\text{kw-hr} \times 1000 = \text{P } 15,202,800.00$$

AGUS 6 & 7 HYDRO ELECTRIC PLANTS  
Mala Ciriho, Iligan City 9200  
Tel. No. (863) 221-8932 to 33; 221-3794 Malal 5431  
Fax. No. (863) 221-9999 221-4366 Surab 5411



ISO 9001:2000 CERTIFIED  
Certificate No. TU1108-01-0217  
TUV Management Service  
Munich, Germany



Nature's Flow

## Scalewatchers for private marine applications

### Models MRNPFW



Model MRNPFW for private boats. The unit is able to treat the cooling water of one engine.

The unit can be connected to a power supply or battery of 12 V and is weatherproof.

---

#### Technical specifications

Supply voltage	12 V DC
Energy consumption	Less than 2 Watt
Capable of driving	2 coils in series
Coil cable	Stranded core 1.5 mm <sup>2</sup>
Maximum Coil Temperature	176°F/ 80 °C
Maximum ambient temperature	122°F/ 50°C
For pipe sizes up to	1"/25 mm
Enclosure material	ABS
Protection rate	NEMA4X/IP66
Dimensions	131x68x49 mm
Weight	800 gram

## Scalewatchers for marine applications

### Models MRN2, MRN4, MRN8



For the protection of cooling water, fire water line, seawater service line, evaporator line and fresh water lines with equipment. Manufactured in The Netherlands only.

#### Technical specifications

Supply voltage	110-240 V AC, $\pm 20\%$ , 50/60 Hz
Energy consumption	Less than 15 Watt depending on model
Capable of driving	2 coils in series
Coil cable	Heavy duty QWPK, three core: 1 mm <sup>2</sup> Outer diameter 7.5 mm
Maximum Coil Temperature	176°F/ 80 °C
Maximum ambient temperature	122°F/ 50°C
For pipe sizes up to	4"/100 mm
Enclosure material	ABS
Protection rate	NEMA4X/IP66
Dimensions including plugs	424 x 144 x 163 mm
Weight	3 kg
Dimension packed	40x30x24 cm
Weight packed without coil	5.3 kg
Weight coil	MRN2: 2.3 kg, MRN4: 2.6 kg, MRN8: 3.3 kg
Packaging material	Non wood

## Scalewatchers for marine applications

### MRNF8



Unit developed for fishing vessels where there is not much space and where only one unit can be installed while several pipe lines have to be treated.

---

#### Technical specifications

Supply voltage	110-240 V AC, $\pm 20\%$ , 50/60 Hz
Energy consumption	Less than 40 Watt
Capable of driving	4 coils in series
Coil cable	Heavy duty QWPK, three core: 1 mm <sup>2</sup> Outer diameter 7.5 mm
Maximum Coil Temperature	176°F/ 80 °C
Maximum ambient temperature	122°F/ 50°C
For pipe sizes up to	8"/200 mm
Enclosure material	ABS
Protection rate	NEMAX/IP67
Weight unit	5.4 lbs/2.5 kg
Dimension unit	9.7"x6.5"x3.8"/246x165x97 mm
Weight coil	8.8 kg



**Scalewatchers for Heavy Industrial applications**

**Models IND1, 2, 3 and 4.**



Light weight Heave Industrial units in ABS enclosure. This is one of our first models (1991). Numerous have been sold in Europe, the Middle East, the USA, China and Japan with no returns. This unit is only made in The Netherlands and is favored in China and Japan.

**Technical specifications**

Model	Pipe diameter	Coil wire	Length (ft/m)	Weight cable (lbs/kg)
Ind1	4"/ 100 mm	3x1 mm <sup>2</sup>	65/20	3.9/1.4
Ind2	8"/ 200 mm	3x1 mm <sup>2</sup>	98/30	4.6/2.1
Ind3	12"/300 mm	3x1 mm <sup>2</sup>	131/40	2.2/2.8
Ind4	16"/400 mm	3x1 mm <sup>2</sup>	164/50	7.7/3.5
Supply voltage	110-240 V AC, ± 20 %, 50/60 Hz			
Supply current	< 1 A			
Overload protection	Replaceable fuse 2 A			
Coil cable	Three core: 1 mm <sup>2</sup> Outer diameter: 7 mm			
Maximum coil temp.	120 °C			
Ambient temperature	+50 °C maximum.			
Remote Alarm facility	Isolated alternating switch			
Output reading	7-segment display. To be adjusted to a reading of 100.			
Enclosure	ABS			
Sealed to	NEM4X/IP66			
Dimensions including plugs	424 x 144 x 163 mm			
Weight unit	6.1 lbs/3 kg			
Dimension packed	40x30x24 cm			
Weight packed without coil	11.6 lbs/5.3 kg			
Packaging material	Non wood			

## Optional equipment

### Scalewatchers for hazardous areas



In areas where there is danger of explosion, caused by a spark igniting a gas or dust, special measures have to be taken to avoid this. One of the measures is to build the electronics in a certified enclosure, in which gas cannot penetrate, requiring also special compound cable glands and sealing paste for this purpose. A second measure is to limit the output current to the coil in such a way that if the coil cable is cut by accident, the spark created has an energy less than the ignition energy of the gas in question. Limiting the output current limits also the scope of applications. Therefore pipe diameters bigger than 20 cm/8" cannot be treated unless the pipe material is made of plastic. Also for mining applications the area can be hazardous. A different kind of enclosure is then required, able to withstand impact of falling rock in addition to being intrinsically safe.

Units for hazardous areas are assembled by an ATEX certified supplier in The Netherlands with the electronics supplied by B & D Ingenieursburo BV and can only be supplied according to the European Norm (EN directives or Zone Classifications). Many, but not all countries accept this norm. For instance, Japan (JIS) and the USA (NEMA, NEC, Class, Division & Group Classifications) have their own norm. See the table below for comparison purposes.

Please submit the zone classification if the unit has to be installed in an hazardous area.

## Optional equipment

## Scalewatchers for hazardous areas

North American

European

	<b>Class, Division &amp; Group Classifications</b>	<b>Zone Classifications</b>														
Hazard type	Explosive airborne mixtures <b>Class I:</b> Gases and/or vapors <b>Class II:</b> Dusts <b>Class III:</b> Fibers or flyings	Explosive airborne mixtures with flammable vapors and/or gases <b>Group I:</b> Mines with methane potential <b>Group II:</b> Places other than mines susceptible to methane <b>Group III:</b> Surface and other locations susceptible to combustible dusts.														
Degree of hazard	<b>Division 1:</b> In normal operating conditions, hazardous material is likely to be present - continuously, periodically or intermittently.	<b>Zone 0:</b> Hazardous air/gas mixture is present continuously or for long periods. <b>Zone 1:</b> Hazardous air/gas mixture is likely to exist for short periods under normal operating conditions. <b>Zone 20:</b> Combustible dust is present continuously or for long periods. <b>Zone 21:</b> Combustible dust is likely to exist for short periods under normal operating conditions.														
	<b>Division 2:</b> Hazardous material is not likely to be present during normal operation - only under fault conditions and only for a short period.	<b>Zone 2:</b> Hazardous air/gas mixture is not likely to occur under normal operating conditions or, if so, only for a short period. <b>Zone 22:</b> Combustible dust is not likely to occur under normal operating conditions or, if so, only for a short period.														
Spark ignition	Hazardous atmospheres grouped by ignition capabilities. For example: <b>Group A:</b> Acetylene <b>Group B:</b> Hydrogen <b>Group C:</b> Ethylene <b>Group D:</b> Propane <b>Group E:</b> Metal dust <b>Group F:</b> Carbon dust <b>Group G:</b> Flour, starch, grain	Explosive gas groups: <b>Group I:</b> Methane <b>Group IIA:</b> Propane <b>Group IIB:</b> Ethylene <b>Group IIC:</b> Hydrogen, acetylene Combustible dust groups: <b>Group IIIA:</b> Combustible flyings <b>Group IIIB:</b> Non-conductive <b>Group IIIC:</b> Conductive														
Hot surface ignition	Hazardous area apparatus classified by the maximum surface temperature produced under fault conditions at an ambient temperature of 40°C (or as otherwise specified).															
	<table border="0"> <tr> <td><b>T1:</b> 450°C</td> <td><b>T2:</b> 300°C</td> <td><b>T2A*:</b> 280°C</td> <td><b>T2B*:</b> 260°C</td> <td><b>T2C*:</b> 230°C</td> <td><b>T2D*:</b> 215°C</td> <td><b>T3:</b> 200°C</td> </tr> <tr> <td><b>T3A*:</b> 180°C</td> <td><b>T3B*:</b> 165°C</td> <td><b>T3C*:</b> 160°C</td> <td><b>T4:</b> 135°C</td> <td><b>T4A*:</b> 120°C</td> <td><b>T5:</b> 100°C</td> <td><b>T6:</b> 85°C</td> </tr> </table>		<b>T1:</b> 450°C	<b>T2:</b> 300°C	<b>T2A*:</b> 280°C	<b>T2B*:</b> 260°C	<b>T2C*:</b> 230°C	<b>T2D*:</b> 215°C	<b>T3:</b> 200°C	<b>T3A*:</b> 180°C	<b>T3B*:</b> 165°C	<b>T3C*:</b> 160°C	<b>T4:</b> 135°C	<b>T4A*:</b> 120°C	<b>T5:</b> 100°C	<b>T6:</b> 85°C
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	* Only applies to North America															

Testimonial hazardous area

To : Unocal Netherlands B.V. - Voorburg.  
Attn : H.C.B. Rottier.  
From : Hoorn Platform.  
Date : February 21st, 1994.  
Subject : Test Scale Watcher on Hoorn-Plf.

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After installation of the Scale Watcher in July 1993, scale inhibitor injection, at 12 Ltr. per day, was stopped; also a clean disperser has been placed in Wemco 3605 and a 3-inch spool piece checked on scale. All in purpose to verify performance of the Scale Watcher over a period of half a year.

January 1994 Wemco 3605 has been cleaned and checked at the following points:

- 1) Disperser ( did look good, as you saw on the foto's ).
- 2) 3-inch spool piece.
- 3) 4-inch Wemco-outlet line to Closed Drain Tank
- 4) 8-inch butterfly-valve was removed to check outlet line.
- 5) Level-control valves and valves of Wemco 3606.

Compared with previous inspections ( without the Scale Watcher ), the above mentioned control items do look good, taken into consideration half a year operating with one Wemco and an average flow of 36.000 BBLs/day, without scale inhibitor injection.

We propose to buy the Scale Watcher on Hoorn-plf., for, operating without scale inhibitor injection, we have almost regained the purchase; ( 12 Ltr./day at DFL. 7.20/Ltr., amounts until now to Dfl. 18.144,00 ).

Before it will be decided to purchase Scale Watcher for the other platforms, we suggest to await the next inspections of both the Wemco's ( in about five months ), as a double-check.

Regards,  
B.Havermans.  
Hoorn-Platform.  
jb

10.00.-

## Optional equipment

### Remote Alarm Unit with siren and strobe light



Siren and alarm light are mounted on the enclosure containing the electronics. It is possible to attach another siren and alarm light to the sockets on the bottom of the enclosure if desired.

To avoid too much noise during installation, it is possible to switch off the audible alarm during installation. In that case the two LED's on the front of the unit can be used to check the alarm status.

Distance between Scalewatcher unit and Remote Alarm unit is not critical.

The unit will trip into alarm when the display on the Heavy Industrial Unit shows EEE or when there is no mains supply. Mains supply for the Remote Alarm Unit should be separate from the Scalewatcher unit.

For inside use only.

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#### Technical specifications

Supply voltage	110-240 V AC, $\pm 20\%$ , 50/60 Hz
Energy consumption	Less than 15 Watt depending on model
Maximum ambient temperature	122°F/ 50°C
Enclosure material	ABS
Protection rate	NEMA5/IP56
Weight unit	6 lbs/2.7 kg
Weight packed	6.2 lbs/2.8 kg
Dimension unit	11.2"x13.9"x5.4"/ 285x353x137 mm
Dimension packed	11.8"x15.7"x5.7"/300x400x145 mm

## Optional equipment

### Test device



The test device is able to detect disturbing signals outside the frequency band being generated by the Scalewatcher unit. For instance, 50 Hz signals from a pump. If measured along the pipe, do not install the coil there.

The test device also indicates whether the correct signal is being generated by the Scalewatcher unit.

Being battery operated (9 V), a LED is incorporated to show “Low Battery”

Dimension: 135 x 69 x 25 mm

Weight: 140 gram

Scalewatcher catalogue  
**Optional equipment**  
**Solar powered**



The controller can be used together with batteries and solar panels, to energize any Scalewatcher unit.

Switches are implemented to secure a safe start up procedure.

Clear operating instructions are available.

This controller is solely manufactured in Thailand.

**Optional equipment**

**Three-phase**



All industrial units can be supplied to operate on any 3-phase configuration.

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**Technical specifications**

Supply voltage	3-phase
Energy consumption	<20 W
Maximum ambient temperature	122°F/ 50°C
Enclosure material	Stainless steel
Protection rate	NEMA4X/IP66
Weight unit	67 lbs/30.2 kg
Weight packed	71 lbs/32.2 kg
Dimension unit	17.7"x23.6"x9.8"/ 450x600x250 mm
Dimension packed	18.9"x26.4"x13.8"/480x670x350 mm



## Optional equipment

### Equipment for pipe inspection



Basic set with 60 m flexible fibre cable, 23 mm camera and controller with monitor.



As the Scalewatcher product keeps pipes cleaner or reduces existing scale, equipment is available to do a pipe inspection.

This service, carried out by Scalewatcher, is available at a small charge. It is also possible that the pipe inspector is rented to the customer.

Three cameras are available: 6 mm, 23 mm and 54 mm for pipes up to 3 m (120").

In case the exact position of the camera in the pipe has to be known a wireless locator is available.



## Ingress Protection IP definitions

### IP First number - Protection against solid objects

0	No special protection
1	Protected against solid objects over 50 mm, e.g. accidental touch by persons hands.
2	Protected against solid objects over 12 mm, e.g. persons fingers.
3	Protected against solid objects over 2.5 mm (tools and wires).
4	Protected against solid objects over 1 mm (tools, wires, and small wires).
5	Protected against dust limited ingress (no harmful deposit).
6	Totally protected against dust.

### IP Second number - Protection against liquids

0	No protection.
1	Protection against vertically falling drops of water e.g. condensation.
2	Protection against direct sprays of water up to 15° from the vertical.
3	Protected against direct sprays of water up to 60° from the vertical.
4	Protection against water sprayed from all directions - limited ingress permitted.
5	Protected against low pressure jets of water from all directions - limited ingress.
6	Protected against temporary flooding of water, e.g. for use on ship decks - limited ingress permitted.
7	Protected against the effect of immersion between 15 cm and 1 m.
8	Protects against long periods of immersion under pressure.

### IP Third number - Protection against mechanical impacts (commonly omitted, the third number is not a part of IEC 60529)

0	No protection.
1	Protects against impact of 0.225 joule (e.g. 150 g weight falling from 15 cm height).
2	Protected against impact of 0.375 joule (e.g. 250 g weight falling from 15 cm height).
3	Protected against impact of 0.5 joule (e.g. 250 g weight falling from 20 cm height).
4	Protected against impact of 2.0 joule (e.g. 500 g weight falling from 40 cm height).
5	Protected against impact of 6.0 joule (e.g. 1.5 kg weight falling from 40 cm height).
6	Protected against impact of 20.0 joule (e.g. 5 kg weight falling from 40 cm height).

In order to comply with the stringent requirements for [CE Marking](#) machine makers today fits their machines with parts certified according EU (European Union) and international standards.

## Ingress Protection NEMA definitions

Level	Object size protected against	Effective against
0	—	No protection against contact and ingress of objects
1	>50 mm	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part
2	>12.5 mm	Fingers or similar objects
3	>2.5 mm	Tools, thick wires, etc.
4	>1 mm	Most wires, screws, etc.
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact (dust proof)
6	Dust tight	No ingress of dust; complete protection against contact (dust tight)

Level	Protected against	Testing for	Details
0	Not protected	—	—
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect.	Test duration: 10 minutes Water equivalent to 1 mm rainfall per minute
2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.	Test duration: 10 minutes Water equivalent to 3 mm rainfall per minute
3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.	Test duration: 5 minutes Water volume: 0.7 litres per minute Pressure: 80–100 kPa
4	Splashing of water	Water splashing against the enclosure from any direction shall have no harmful effect.	Test duration: 5 minutes Water volume: 10 litres per minute Pressure: 80–100 kPa
5	Water jets	Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects.	Test duration: at least 15 minutes Water volume: 12.5 litres per minute Pressure: 30 kPa at distance of 3 m
6	Powerful water jets	Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects.	Test duration: at least 3 minutes Water volume: 100 litres per minute Pressure: 100 kPa at distance of 3 m
6K	Powerful water jets with increased pressure	Water projected in powerful jets (6.3 mm nozzle) against the enclosure from any direction, under elevated pressure, shall have no harmful effects.	Test duration: at least 3 minutes Water volume: 75 litres per minute Pressure: 1000 kPa at distance of 3 m
7	Immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).	Test duration: 30 minutes Immersion at depth of at most 1 m measured at bottom of device, and at least 15 cm measured at top of device
8	Immersion beyond 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it produces no harmful effects.	Test duration: continuous immersion in water Depth specified by manufacturer, generally up to 3 m
9k	Powerful high temperature water jets	Protected against close-range high pressure, high temperature spray downs.	—

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